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09/325,110	06/03/1999	CARL S. ANSELMO	PD-990033	2415

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EXAMINER

CHOW, CHARLES CHIANG

ART UNIT PAPER NUMBER

2618

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Please find below and/or attached an Office communication concerning this application or proceeding.

<b>Office Action Summary</b>	<b>Application No.</b> 09/325,110	<b>Applicant(s)</b> ANSELMO, CARL S.	
	<b>Examiner</b> Charles Chow	<b>Art Unit</b> 2618	

**-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --**

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 6/27/2006.
- 2a) ☐ This action is **FINAL**.                      2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1-31 is/are pending in the application.
- 4a) Of the above claim(s) 9, 10, 13, 14, 19 and 20 is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-8, 11, 12, 15-18 and 21-31 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All    b) ☐ Some \* c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- \* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- |  |   |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)  | 4) <input type="checkbox"/> Interview Summary (PTO-413)<br>Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)   | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152)             |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)<br>Paper No(s)/Mail Date <u>7/21/2003</u> . | 6) <input type="checkbox"/> Other: _____  |

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### Detailed Action

1. This office action is for Appeal Brief filed on 6/21/2006.
2. Applicant's request for reconsideration of the finality of the rejection of the last Office action is persuasive and, therefore, the finality of that action is withdrawn.

### Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

3. Claims 1, 3-5 are rejected under 35 U.S.C. 103(a) as being unpatentable over Hammill et al. (US 6,173,178 B1) in view of Floury et al. (US 5,963,845) and Green et al. (US 5,073,930).

**For claim 1**, Hammill et al. [Hammill] teaches a system for providing high frequency data communication [Fig. 1] for the high frequency satellite data communication system [col. 3, line 53 to col. 4, line 25], the system comprising

a plurality of communication satellites [ col. 1, lines 18-26], having uplink and downlink antennas capable of receiving and transmitting a plurality of signals [ the 6 satellite antenna provides the downlink, uplink multiple beams, for communication with ground station, col. 4, lines 13-25],

the at least one of said satellite being a reconfigurable satellite [ the re-configuration for various different frequencies, different beam bandwidth, beam sizes, via information transmitted from ground station, col. 4, lines 13-25],

Hammill fails to teach the frequency synthesizer, a routing table, a controller for controlling a frequency reconfiguration.

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However, Flourey teaches a programmable frequency synthesizer [OL11 to OL162, Fig. 4-5, of the frequency converter ], coupled to an upconverter [MS11-MS161] and a down converter of a communication control circuit [ down converters, MS112-MS162, for converting to any frequency, for any frequency conversion, col. 5, lines 8-24, of the communication circuit in Fig. 4-5, Fig. 2A-2D].

a routing table storing tuning information therein [TC1 to TC16 stored with frequency tuning information, received from ground facility, col. 9, lines 16-29],

a control signal coupled to the control circuit [a controlling, coupline of frequency tuning information, TC1 to TC16 in Fig. 4, to each switch SW of the frequency converters, from the telecontrol signals received from ground facility, col. 4, lines 19-38, col. 9, lines 16-50, Fig. 4],

said controlling a frequency reconfiguration of said communication control circuit through said programmable frequency synthesizer in response to said tuning information [ the controlling of TC1 to TC16 for frequency reconfiguration through the synthesizer local oscillators OL11 to OL162, in response to the tuning information in the telecontrol signal received from the ground facility, col.9, lines 16-50 & col. 4, line 19-38].

Hammill & Flourey fail to teach a controller located on said satellite coupled to sad communications control circuit.

Green et al. [Green] teaches these features [an on-board controller & computer in Fig. 3, col. 13, line 3 to col. 4, line 13; controlling the programmable PLL 246/248, Fig. 3, col. 13, line 59 to col. 14, line 13, and PLL 224/226, col. 13, lines 3-33], in order to map frequencies via satellite transponder, to distribute television signal. Therefore, it would have been obvious to one of ordinary skill in the art at the time of invention to modify Hammill, Flourey

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with Green's on board computer, in order to control the frequency for the map frequencies of the satellite transponder.

**For claim 3,** Hammill, Flourey & Green fail to teach the features for this claim.

Green et al. [Green] teaches said communication control circuit comprises an upconverter and a down converter [ the microcomputer 206, Fig. 3, and its associated control circuit for PLL 226/248], the controller 206 for tuning the up/down converter 204/200, utilizing PLL 248/226 [ Fig. 2/Fig. 3, col. 12, lines 16-19 & col. 13, line 61 to col. 14, line 13]; the up converter 204 & down converter 200 in Fig. 3 are respectively coupled to the programmable phase locked loop 226/224 [col. 13, lines 3-33], for a satellite television transponder [title, abstract], in order to map frequencies via satellite transponder, to distribute television signal. Therefore, it would have been obvious to one of ordinary skill in the art at the time of invention to upgrade Hammill, Flourey with Green's programmable synthesizer of the up/down converting, in order to map the frequencies via satellite transponder, to distribute television signal.

**For claim 4,** Green teaches said communications control circuit comprises a transponder [ the communication control circuit in Fig. 3 of the satellite transponder], using the same reasoning in claim 3 above to combine Green to Hammill & Flourey.

**For claim 5,** Green teaches the up converter [204] and down converter [200], using the same reasoning in claim 3 above to combine Green to Hammill & Flourey.

4. Claim 2 is rejected under 35 U.S.C. 103(a) as being unpatentable over Hammill in view of Flourey, Green, as applied to claim 1 above, and further in view of Wiswell et al. (US 6,205,319 B1).

**For claim 2,** Hammill, Flourey & Green fail to teach the features for this claim.

Wiswell et al. [Wiswell] teaches, the comprising a beam forming network coupled to uplink and downlink antenna [ front figure, the receive/transmit beam phased array 102-108, 120-126; up/down converter 110] for the selectively adjusting of the amplitude and phase antenna beam for receiving/transmitting information [ abstract, col. 1, lines 5-9; col. 2, lines 27-30], using fewer multi-beam antennas [ col. 1, line 65 to col. 2, line 2; col. 2, lines 8-15], in order to reduce the satellite payload complexity, and the power requirement using fewer beam antennas. Therefore, it would have been obvious to one of ordinary skill in the art at the time of invention to modify Hammill, Flourey, Green with Wiswell's fewer beam phased array antennas for receiving and transmitting, in order for the satellite payload to be efficient, of having less complexity, & saving power consumption.

5. Claims 6-7 are rejected under 35 U.S.C. 103(a) as being unpatentable over Hammill in view of Flourey, Green, as applied to claim 1 above, and further in view of Brown (US 6,157,621).

**For claim 6,** Hammill, Flourey & Green fail to teach the features for this claim.

Brown teaches the said communication control circuit comprising a TDMA switch [ the time division multiple access switch in col. 61, lines 24-31, for the communication control circuit]. Brown considers the utilization of the on-board computer, the adaptive routing processor for selecting the best route pathway according to routing table [col. 17, line 8-42; col. 43, line 46 to col. 44, line 9]. Brown provides the solution for selecting of the best routing path utilizing the route table information, above, such that the route could be the best path. Therefore, it would have been obvious to one of ordinary skill in the art at the time of invention to modify Hammill, Flourey & Green with Brown's TDMA switch, such that the best route path could be selected.

**For claim 7**, Brown teaches said communication control circuit comprises a packet switch (the packet switch 1306 [Fig. 112A; col. 60, line 65 to col. 61, line 11], using the same reasoning in claim 3 above to combine Brown to Hammill & Flory.

6. Claim 8 is rejected under 35 U.S.C. 103(a) as being unpatentable over Hammill in view of Flory, Green, as applied to claim 1 above, and further in view of Galvin (US 6,182,927 B1).

**For claim 8**, Hammill, Flory & Green fail to teach the satellites for LEO, MEO, GSO.

Galvin teaches the satellites for LEO, MEO, GSO (col. 6, lines 34-54, the low earth orbit satellites 50, GEO 52, the MEOs in Fig 6) for improving the satellite navigation accuracy [col. 2, line 47]. Galvin teaches the efficient method to add the augmentation satellites in LEO, or MEO or GEO, the navigation accuracy could be improved (col. 6, lines 34-37). Therefore, it would have been obvious to one of ordinary skill in the art at the time of invention to modify Hammill, Green, with Galvin's adding different augmentation satellites such that the system could be provide the navigation accuracy.

7. Claims 11-12, 15 are rejected under 35 U.S.C. 103(a) as being unpatentable over Flory in view of Wolcott et al. (US 6,317,583 B1), and further in view of Green-'930.

**For claim 15**, Flory teaches a payload circuit for a satellite [Fig. 4-5] comprising a receive array [Xpol, Ypol, antennas in Fig. 2a], a transmit array [Ant (t) in Fig. 2B], for re-configuration [col. 7, lines 48-54; col. 9, lines 29-38], said communication control circuit [Fig. 4-5] being an up converter and a down converter [ the two mixers Ms11 to MS162 in Fig. 4], for any frequency conversion [col. 5, lines 8-24].

reconfiguration circuit coupled to the communications control circuit for reconfiguring the communication control circuit [ the frequency synthesizer local oscillators OL11 to OL162

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coupled to the communication control circuit, mixers MS11 to MS162, for reconfiguring the frequency, Fig. 4],

said reconfiguration circuit comprising a programmable frequency synthesizers coupled to the up converter and down converter [the synthesizer OL11 to OL162 coupled to the up, down converter mixers MS11 to MS162], and

a routing table [TC1 to TC16] having tuning information stored therein, said on board controlling a reconfiguration of said communication control circuit through said programmable frequency synthesizer in response to said tuning information [ the tuning of synthesizer local oscillators OL11 to OL162 from the tuning information in the telecontrol signal received from the ground facility [ col.9, lines 16-50 & col. 4, line 19-38].

Floury fails to teach a receive beam forming network, a transmit beam forming network, for the controlling of the satellite communication.

Wolcott teaches these features [ the synthesizers in Fig. 5, col. 5, lines 1-29; Fig. 6, the receive arrays 160-162, receiver beam forming network 170, the transmit beam forming network BNF 214, the transmit array 1-85]. Wolcott teaches the reliable beam handover for the mobile terminal ground tracking [col. 6, line 48 to col. 7, line3]. Therefore, it would have been obvious to one of ordinary skill in the art at the time of invention to modify Floury with Wolcott's satellites in constellation, having tunable synthesizer for beam handover, such the satellite beam reconfiguration could be reliable.

Floury & Wolcott fail to mention the on board computer.

Green teaches the on board computer [the microcomputer 206, Fig. 3, and its associated control circuit for PLL 226/248], in order to map frequencies via satellite transponder. Therefore, it would have been obvious to one of ordinary skill in the art at the



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time of invention to upgrade Floury, Wolcott with Green's microcomputer 206, in order to map the frequencies via satellite transponder.

**For claim 11**, Green teaches said communications control circuit comprises a transponder [ the communication control circuit in Fig. 3 of the satellite transponder], using the same reasoning in claim 3 above to combine Green to Floury & Wolcott.

**For claim 12**, Green teaches said communication control circuit comprises an upconverter and a down converter [ the microcomputer 206, Fig. 3, and its associated control circuit for PLL 226/248], using the same reasoning in claim 3 above to combine Green to Floury & Wolcott.

8. Claims 16-17 are rejected under 35 U.S.C. 103(a) as being unpatentable over Floury in view of Wolcott, Green, as applied to claim 15 above, and further in view of Brown (US 6,157,621).

**For claim 16**, Floury & Wolcott fail to teach the features in this claim.

Brown teaches said communication control circuit comprising a TDMA switch ( the time division multiple access switch (in col. 61, lines 24-31, for the communication control circuit), Brown provides the solution for selecting of the best routing path utilizing the route table information, above, such that the route could be the best path. Therefore, it would have been obvious to one of ordinary skill in the art at the time of invention to modify Hammill, Wolcott with Brown's TDMA switch, such that the best route path could be selected.

**For claim 17**, Brown teaches said communication control circuit comprises a packet switch (the packet switch 1306 (Fig. 112A; col. 60, line 65 to col. 61, line 11).

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9. Claims 18, 28 are rejected under 35 U.S.C. 103(a) as being unpatentable over Floury in view of Pizzicaroli et al. (US 5,813,634).

**For claim 18**, Floury teaches a method of configuring a satellite [Fig. 4-5] comprising the steps of

transmitting reconfiguration instructions to said satellite [receiving command from ground facility, col. 4, lines 19-38 & col. 9, lines 16-38]

reconfiguring the frequency configuration of the payload of the reconfiguration satellite in response to the tuning information in a routing table by changing an up converter frequency and a down converter frequency using a programmable frequency synthesizer [reconfiguring satellite in response to the tuning information in routing table TC1-TC16 from ground, by changing an up converter frequency mixer MS11, and a down converter frequency, mixer MS12, using programmable synthesizer local oscillator OL11-OL12, Fig. 4, col. 9, lines 16-50; for any frequency conversion, col. 5, lines 8-24].

Floury fails to teach configuring a satellite system having plurality of satellites; the deploying a reconfigurable satellite; the re-positioning a satellite from a network position, and moving the reconfigurable satellite into the network position.

Pizzicaroli teaches these features [ the replacing of the failing satellite with spare satellite, abstract, Fig. 1; step of deploying a reconfigurable satellite, Fig. 5-6, steps 720, whether to place spare satellite in service; the commanding spare satellite to maneuver into position to provide service in col. 5, lines 41-55; step 725, give spare satellite positional target and authorization; command two satellites to spare orbit in step 750; command satellite to initiate maneuver in step 760], in order to provide reliable satellite communication link by utilizing a spare satellite to replace the failing satellite. Therefore, it would have been obvious to one of ordinary skill in the art at the time of invention to modify Floury with

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Pizzicaroli's repositioning, maneuvering, the spare satellite into operating orbit, in order to provide the reliable communication link, by utilizing the spared satellite.

**For claim 28**, Flourey teaches a method of configuring a satellite [Fig. 4-5] comprising the steps of

transmitting reconfiguration instructions to said satellite [receiving command from ground facility, col. 4, lines 19-38 & col. 9, lines 16-38]

reconfiguring the frequency configuration of the payload of the reconfiguration satellite in response to the tuning information in a routing table by changing an up converter frequency and a down converter frequency using a programmable frequency synthesizer

[ reconfiguring satellite in response to the tuning information in routing table TC1-TC16 from ground, by changing an up converter frequency mixer MS11, and a down converter frequency, mixer MS12, using programmable synthesizer local oscillator OL11-OL12, Fig. 4, col. 9, lines 16-50; for any frequency conversion, col. 5, lines 8-24].

Flourey fails to teach the deploying a reconfigurable satellite.

Pizzicaroli teaches these features [ the replacing of the failing satellite with spare satellite, abstract, Fig. 1; step of deploying a reconfigurable satellite, Fig. 5-6, steps 720, whether to place spare satellite in service; the commanding spare satellite to maneuver into position to provide service in col. 5, lines 41-55; step 725, give spare satellite positional target and authorization; command two satellites to spare orbit in step 750; command satellite to initiate maneuver in step 760], in order to provide reliable satellite communication link by utilizing a spare satellite to replace the failing satellite. Therefore, it would have been obvious to one of ordinary skill in the art at the time of invention to modify Flourey with Pizzicaroli's repositioning, maneuvering, the spare satellite into operating orbit, in order to provide the reliable communication link, by utilizing the spared satellite.

10. Claims 21-27, 29-31 are rejected under 35 U.S.C. 103(a) as being unpatentable over Flourey in view of Pizzicaroli, as applied to claim 18 above, and further in view of Brown-'621.

**For claim 21**, Flourey & Pizzicaroli, fail to teach the steering antenna and phase shift. Brown teaches the steering antenna and phase shift (col. 14, line 51 to col. 15, line 5) and the beam forming 554/568, beam compensation (Fig. 42, col. 19, lines 15-40).

Brown teaches the utilization of the on-board computer, the adaptive routing processor for selecting the best route pathway according to routing table (col. 17, line 8-42; col. 43, line 46 to col. 44, line 9). Brown provides the solution for selecting of the best routing path utilizing the route table information, above, such that the route could be the best path. Therefore, it would have been obvious to one of ordinary skill in the art at the time of invention to modify Flourey, Pizzicaroli with Brown's steering antenna and phase shift, such that the best route path could be selected.

**For claim 22**, Flourey teaches further comprising storing tuning information in a routing table [the storing of tuning information received to TC1-TC16].

**For claim 23**, Brown taught the steering antenna, phase shift, the beam compensation for the changing of amplitude or phase of a beam (the beams steering using various microstrip phase delay line in col. 14, line 51 to col. 15, line 4; the beam steering with independently controlling of directivity gain and power gain, and the control for increasing the receive power gain in col. 25, lines 29-52). Flourey teaches the tuning information in table TC1-TC16, using the same reasoning in claim 21 above to combine Brown with Flourey, Pizzicaroli.

**For claims 24, 25,** Pizzicaroli teaches the moving of the reconfigurable satellite. Brown teaches the performed using east/west station keeping [col. 30, lines 7-20], using the same reasoning in claim 21 above to combine Brown with Flourey & Pizzicaroli.

**For claims 26, 27, 30, 31,** Brown teaches the constantly updating of the route information in the cache memory and receive route information for the updating the routing table from order wire, from RF control channel [col. 43, line 46 to col. 44, line 9; col. 49, lines 10-20], using the same reasoning in claim 21 above to combine Brown with Flourey & Pizzicaroli.

**For claim 29,** Flourey & Pizzicaroli fail to teach the step of reconfiguring the payload comprising changing the amplitude or phase coefficients of a beam in response to the tuning information.

Brown teaches the reconfiguring the payload comprising the changing of the amplitude or phase coefficient of the beam in response to the tuning information in the routing table (the beams steering using various microstrip phase delay line in col. 14, line 51 to col. 15, line 4; the beam steering with independently controlling of directivity gain and power gain, and the control for increasing the receive power gain in col. 25, lines 29-52), the utilization of the on-board computer, the adaptive routing processor for selecting the best route pathway according to routing table (col. 17, line 8-42; col. 43, line 46 to col. 44, line 9). Brown provides the solution for selecting of the best routing path utilizing the route table information, above, such that the route could be the best path. Therefore, it would have been obvious to one of ordinary skill in the art at the time of invention to modify Flourey, Pizzicaroli, with Brown's TDMA switch, such that the best route path could be selected.

### **Response to Argument**

11. Applicant's arguments filed 6/12/2006 in the appeal brief have been fully considered but they are not persuasive.

Regarding applicant argument for the no teachings of the satellite frequency reconfiguration of the communication circuit through the programmable frequency synthesizer; the frequency tuning information in a routing table [pages 7-8 of appeal brief 6/21/2006,

**Floury et al. (US 5,963,845)** teaches Floury teaches a programmable frequency synthesizer [OI11 to OL162, Fig. 4-5, of the frequency converter ], coupled to an upconverter [MS11-MS161] and a down converter of a communication control circuit [down converters, MS112-MS162, for converting to any frequency, for any frequency conversion, col. 5, lines 8-24, of the communication circuit in Fig. 4-5, Fig. 2A-2D].

a routing table storing tuning information therein [TC1 to TC16 stored with frequency tuning information, received from ground facility, col. 9, lines 16-29],

a control signal coupled to the control circuit [a controlling, coupline of frequency tuning information, TC1 to TC16 in Fig. 4, to each switch SW of the frequency converters, from the telecontrol signals received from ground facility, col. 4, lines 19-38, col. 9, lines 16-50, Fig. 4],

said controlling a frequency reconfiguration of said communication control circuit through said programmable frequency synthesizer in response to said tuning information [ the controlling of TC1 to TC16 for frequency reconfiguration through the synthesizer local oscillators OL11 to OL162, in response to the tuning information in the telecontrol signal received from the ground facility, col.9, lines 16-50 & col. 4, line 19-38].

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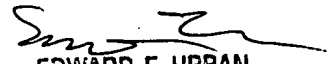
Green teaches these features [an on-board controller & computer in Fig. 3, col. 13, line 3 to col. 4, line 13; controlling the programmable PLL 246/248, Fig. 3, col. 13, line 59 to col. 14, line 13, and PLL 224/226, col. 13, lines 3-33], in order to map frequencies via satellite transponder, to distribute television signal.

### **Conclusion**

12. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Charles C. Chow whose telephone number is (703) 306-5615. The examiner can normally be reached on 8:00am-5:30pm. If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Edward Urban can be reached on (703) 305-4385. The fax phone number for the organization where this application or proceeding is assigned is (571) 273-8300. Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Charles Chow *CC*.

August 3, 2006.

  
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